

ABSTRACT OF THE DISCLOSURE

The laser range finding apparatus includes an optical relaxation oscillator assembly, outcoupling optics, a photodetector and a controller. The optical relaxation oscillator assembly produces relaxation oscillations. The relaxation oscillations are a series of optical pulses having a controllable repetition rate. The outcoupling optics receives the series of optical pulses and redirects a minor portion of the energy of the series of optical pulses. A major portion of the energy of the series of optical pulses is adjusted in accordance with first desired beam propagation parameters. A photodetector receives the minor portion and converts the minor portion to an electrical signal representative of the series of optical pulses. A controller receives the electrical signal and determines the repetition period between the optical pulses. The controller provides a controller output to the optical relaxation oscillator assembly for adjusting the controllable repetition rate of the series of optical pulses produced by the optical relaxation oscillator assembly. During operation, the major portion of the energy of the series of optical pulses is directed to a reflecting target, reflected therefrom, collected by the outcoupling optics, and directed back to the optical relaxation oscillator assembly to stimulate subsequent relaxation oscillations, thus locking the period of the relaxations oscillations to the time of flight of the roundtrip path between the laser finding apparatus and the reflecting target.